DOCUMENT RESUME

ED 100 986 TM 004 106

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TITLE	The Maladaptive Behavior Record (MBR): The Role of Maladaptive Reaction Patterns in the Analysis and Prediction of Criminal Behavior and Recidivism.
INSTITUTION	Rehabilitation Research Foundation, Montgomery, Ala.
SPONS AGENCY	Manpower Administration (DOL), Washington, D.C.
REPORT NO	RRF-912-4-74
PUB DATE	Apr 74
NOTE	25p.; For a related document, see TM 004 105
EDRS PRICE	MF-$0.75 HC-$1.85 PLUS POSTAGE
DESCRIPTORS	Adults; *Behavior Rating Scales; Correctional Rehabilitation; Criminals; Longitudinal Studies; *Prediction; Predictive Validity; *Recidivism; Social Adjustment; *Socially Deviant Behavior; Test Reliability; Test Validity
IDENTIFIERS	Law Encounter Severity Scale; *Maladaptive Behavior Record

ABSTRACT

The Maladaptive Behavior Record (MBR) analyzes and predicts criminal behavior. Its 16 items yield a score indicating the degree of maladaptive behavior in the areas of occupation, interpersonal relationships, addiction, psychological adjustment, and legal and other behavioral problems. The MBR was used in two longitudinal followup studies to analyze criminal behavior and assess the effects of institutional treatment on the postrelease adjustment of released offenders, particularly in terms of law encounters and recidivism. Data on 119 prison releasees were used to validate the MBR against the law Encounter Severity Scale (LESS), a criterion for criminal behavior that ranges from no law encounters to return to prison for a life sentence. The predictive accuracy of the total score is 70 percent for all cases and about 85 percent for outlying groups and scores. In addition to validity, the consistency and reliability of the MBR are high. The MBR yielded moderate to substantial correlation with two other instruments, the Environmental Deprivation Scale (EDS) and the Weekly Activity Report (WAR). (Author/SM)

ED100986

THE MALADAPTIVE BEHAVIOR RECORD (MBR): THE ROLE OF MALADAPTIVE REACTION PATTERNS IN THE ANALYSIS AND PREDICTION OF CRIMINAL BEHAVIOR AND RECIDIVISM

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TM 004 106

Experimental Manpower Laboratory for Corrections
Rehabilitation Research Foundation
April 1974

RRF-912-4-74

This report on the Experimental Manpower Laboratory for Corrections was prepared under Grant No. 21-01-73-38 with Manpower Administration, U. S. Department of Labor. Organizations undertaking such projects under Federal Government sponsorship are encouraged to express their own judgement freely. Therefore, points of view or opinions stated in this document do not necessarily represent the official position or policy of the Department of Labor or other federal agencies mentioned herein.

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Preface

This report focuses on the validation of the Maladaptive Behavior Record (MBR), a measure of behaviors leading to law encounters and violations. It is one of a series of eight reports stemming from the 1971 Follow-up Study. The other seven deal with the following topics:

- The overall methodology and outcomes of the 1971 Follow-up Study.
- The development of the Law Encounter Severity Scale (LESS), the criterion for law-violating and criminal behavior and recidivism.
- The further validation of the Environmental Deprivation Scale (EDS), a measure of environmental input and support for adaptive behavior.
- The development and validation of the Weekly Activity Record (WAR), a measure of time allocation of behavior.
- The psychometric details of analysis of the data from these predictive instruments, including reliability intercorrelations, etc.
- The development of a behavioral interview guide.
- A number of *hypothesis-generating studies* that developed from the comprehensive follow-up data and that suggest new research dimensions.

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Abstract

This paper describes the Maladaptive Behavior Record (MBR), a behavioral assessment instrument that analyzes and predicts criminal behavior. Its 16 items yield a numerical score indicating the degree of maladaptive behavior in the areas of occupation, interpersonal relationships, addiction, psychological adjustment, and legal and other behavioral problems. The information for scoring the MBR is collected in a behavioral interview. The MBR was developed by the Experimental Manpower Laboratory for Corrections (EMLC) and used in two longitudinal follow-up studies to analyze criminal behavior and assess the effects of institutional treatment on the postrelease adjustment of released offenders, particularly in terms of law encounters and recidivism.

The data in this report were obtained in the second study, the 1971 Follow-up Study. MBR scores were available for 119 prison releasees. These data were used to validate the MBR against the Law Encounter Severity Scale (LESS), a five-part criterion for criminal behavior that ranges from no law encounters to return to prison for a life sentence. The predictive accuracy of the total score is 70% for all cases and about 85% for outlying groups and scores. MBR items and item clusters also yield high validity. In addition to validity, the consistency and reliability of the MBR are high.

The MBR yields moderate to substantial correlation with the other two instruments used in the 1971 Follow-up Study, the Environmental Deprivation Scale (EDS) and the Weekly Activity Report (WAR).

The MBR stands as a highly effective diagnostic and evaluative tool. One of its main contributions is its capacity for pinpointing specific behavioral problem areas for treatment, intervention, or retraining.

Developmental Setting of the Behavioral Assessment Instruments

The research reported here is part of the 1971 Follow-up Study, a longitudinal investigation of the postrelease behavior of the released offender and the effects of institutional treatment on this behavior. This study, conducted by the Experimental Manpower Laboratory for Corrections (EMLC), replicates, in part, a previous study begun in 1969 and referred to as the 1969 Follow-up Study (Jenkins, Barton, deValera, DeVine, Witherspoon, Muller, & McKee, 1973). The primary objectives of the studies were: (1) to identify the environmental and behavioral particulars that influence postrelease adjustment in order to develop measures predictive of law-violating behaviors and recidivism, (2) to construct a methodological vehicle for longitudinal follow-up evaluation of institutional treatment programs, and (3) to utilize this behavioral, diagnostic information to develop effective institutional and community treatment programs.

The first instrument used in these studies was the Environmental Deprivation Scale (EDS), developed earlier by Pascal and Jenkins (1961) and adapted by the EMLC for use with an offender population The EDS is a 16-item checklist, scored from information collected in a behavioral interview, that measures the environmental input and support an individual receives for adaptive (socially acceptable) behavior. Environmental input is directly related to behavioral response. The Maladaptive Behavior Record (MBR) was developed as a counterpart to the EDS to obtain a more complete picture of the interaction of the individual with his environment, particularly in terms of maladaptive responses, i.e., those behaviors that culminate in law violation.

The MBR was first used with the EDS in the 1969 Follow-up Study. Both instruments were found to be predictive of criminal behavior and recidivism, but the MBR was revised to increase its predictive capacity. A third instrument–the Weekly Activity Record (WAR)–was developed near the end of the first follow-up study to measure the *duration* of behavior. All three instruments were then used in the second investigation, the 1971 Follow-up Study.

This report presents the details of the application and validation of the MBR in the 1971 Follow-up Study. MBR scores were available for 119 men who were released or paroled from Draper Correctional Center in Elmore, Alabama. The data were analyzed in terms of MBR total scores, individual items, item clusters, accuracy in predicting law encounters and recidivism, and the effect of various types of institutional treatment on

MBR scores and law encounters. The reliability of the MBR and its relationship to the EDS and WAR were also examined.

Development and Description of the MBR

The original form of the MBR had 19 items derived from three sources: (1) the personal experience of the EMLC staff in corrections and psychology, (2) experience in field interviewing of released offenders, and (3) the basis provided by the EDS in pinpointing areas of environmental deprivation. While data and experience gained in the use of this initial form of the instrument indicated that broad areas of inquiry should be maintained, some areas were expanded in scope to cover behavioral incidents in a broader context, others reduced to a more limited context, and still others eliminated, reducing the total number of items to 16 in the revised form of the MBR. These items are categorized in the areas of employment, addiction, interpersonal relationships, psychological adjustment, and legal problems (other than arrests). The final form of the MBR was employed in the current study.

Scoring Procedure and Description of the Items

The information for scoring the MBR is obtained in a face-to-face interview with *S*. Scoring is forced choice. If *S* reports behaving in a maladaptive manner, he is scored "1" for that item. If no maladaptive behavior is reported, a score of "0" is given for the item. The maximal range of the MBR is thus 0-16, with the former score indicating no major maladjustive behavior and the latter, complete maladaptation.

The response items of the MBR are listed below with an indication of what is considered in scoring each item.

1. *Income*. This item assesses whether income is utilized to meet basic needs or is adequate for them. If his income is inadequate, *S*'s response to this situation is assessed (e.g., seeking other employment).

2. *Working Conditions*. Here *S*'s reactions to the physical working conditions, scheduling, safety, etc. are measured. If his working conditions are uncomfortable or inconvenient, is *S* actively seeking a solution to the problem?

3. *Interaction with Co-workers*. Significant or continuing problems in *S*'s interaction with his co-workers are assessed.

4. *Interaction with Employer*. The behavioral problems of *S* with his foreman, supervisor, or employer form the basis for scoring this item.

5. *Work Attendance*. Absenteeism and punctuality are recorded.

6. *Alcohol Use*. Use of alcohol is assessed in terms of its influence on employment, interpersonal relationships, finances, and family relationships.

7. *Drug Use*. The maladaptive use of drugs is recorded (i.e , whether use of drugs interferes with employment or interpersonal relationships or causes financial hardship for *S* or his family).

8. *Gambling*. Excessive gambling losses that interfere with interpersonal relationships or cause financial hardship for *S* or his family are considered maladaptive.

9. *Fighting*. The extent to which physical fighting is exhibited by the client is assessed. If the fighting is precipitated either by his inappropriate behavior or by his failure to avoid fighting, his behavior is scored as maladaptive.

10. *Verbal Abusiveness*. *S*'s behavior is considered in terms of his engaging in or being the target of provoked verbal abusiveness, participating in intense arguments, etc.

11. *Maladaptive Associates*. Here the input and reinforcement from others is examined. Does *S* seek out and spend time with persons who exhibit maladaptive behavior in such areas as crime, drug use, sex, or employment?

12. *Money Management*. *S*'s problems in handling his financial affairs are assessed, e.g., overspending for nonessentials or over-extended installment purchasing.

13. *Physical Condition*. *S* is scored on his adaptive handling of his health needs and care in terms of seeking treatment, following the doctor's directions, etc.

14. *Psychological Adjustment*. Here note is taken of other deviancies in coping with daily situations, e.g., excessive anxiety, dependency on others, or withdrawal. Behavioral deficits that interfere with instituting and maintaining supportive interpersonal relationships are scored as maladaptive.

15. *Legal Processes*. *S*'s behavior in coping with legal problems (not involving arrests) is assessed.

16. *Other Behavioral Problems*. Here *S* is scored on other deviancies, such as maladaptive sexual behavior, dress, or hygiene.

The interviewer records the specifics for each item that formed the basis for scoring as well as the numerical score. Frequency and intensity of the behavior are the primary dimensions considered.

Methodology in the Application and Validation of the MBR

In the 1971 Follow-up Study, 142 offenders released or paroled from Draper Correctional Center between October, 1970, and January, 1972, were behaviorally interviewed prior to release and at postrelease intervals of 3-6 and 12-15 months. About 10% left the research area and were not interviewed postrelease; the remainder were seen at least once. The interviews were structured by the instruments used: the Interview Guide, EDS, MBR, and WAR. Information was sought pertaining to specific behaviors and environmental events in the areas of societal adjustment (which included law encounters), social and interpersonal behavior, occupation and employment, money matters and financial status, housing, and public acceptance. Each *S*'s law encounters were recorded with the corresponding dates and verified when necessary. The average length of time an *S* was followed up was 18 months.

MBR data analysis was conducted on both the total *S*s (119) and the total number of MBR scores available for these *S*s (152). Approximately 12% of the study *S*s committed multiple misdemeanors or had more than one law encounter, and an MBR score was recorded for each incident. These scores reflected *S*'s behavior immediately prior to the actual commission of the misdemeanor or law encounter. In a separate part of this study, about one-fourth of the *S*s were seen on a monthly basis to examine time trends.

The data were analyzed using both univariate and multivariate procedures. First the data were subjected to shortcut manual techniques (Jenkins & Hatcher, 1974). All data then underwent computer analyses, including factor analysis and multiple discriminant analysis. The outcomes of the two statistical approaches were completely consistent. The computer outcomes are contained in the final report on the 1971 Follow-up Study (Jenkins, Witherspoon, DeVine, deValera, Muller, Barton, & McKee, 1974), while the outcomes of the shortcut techniques are highlighted in this report.

To determine the law encounter status of each *S*, the EMLC's Law Encounter Severity Scale (LESS) (Witherspoon, deValera, & Jenkins, 1973) was used as the criterion for law violation and recidivism. The LESS is a continuum of crime severity, consisting of 38 points that range from no law encounters to felony conviction with a sentence of 20 years or more (including a life sentence or the death penalty). Five LESS groups were formed by combining law encounters of comparable severity into clusters. These may be summarized as follows:

Group I: No law encounters.

Group II: Picked up and/or questioned or searched concerning misdemeanor(s) or felony(s), with all charges eventually being dropped.

Group III: Awaiting trial for misdemeanor(s) or was tried in court for misdemeanor(s) or felony(s) but was not convicted, picked up for parole violation but parole reinstated (or waiting hearing), wanted for misdemeanor(s), killed in commission of a misdemeanor, or convicted of misdemeanor or sentenced or fined.

Group IV: Wanted for felony(s), absconded from parole, awaiting trial for felony(s), parole violated and returned to prison, killed during the commission of a felony(s), or convicted for felony(s) and placed on probation or sentenced to less than one year in prison.

Group V: Convicted for felony(s) and sentenced to prison for more than one year.

Results

Analysis by Total Number of MBR Scores and Law Encounters

The maximal *N* of 152 MBR scores for the 119 *S*s was employed initially. Table 1 presents the MBR frequency distribution for each of the five LESS groups. Scores cluster at the low end of the MBR scale for LESS Groups I and II and toward the high end for Groups IV and V.

Table 1

MBR Scores for 119 Subjects in the 1971 Follow-up Study Separated by LESS Group (For Groups II-V the *N*s represent the total number of law encounters rather than the actual number of *S*s.)

MBR Score	LESS Group					
	I *N* = 40	II *N* = 43	III *N* = 26	IV *N* = 17	V *N* = 26	Total *N* = 152
14-15	0	0	0	0	1	1
12-13	0	2	2	3	4	11
10-11	1	4	4	2	6	17
8-9	2	7	5	4	8	26
6-7	3	4	5	2	2	16
4-5	8	6	5	3	2	24
2-3	12	10	3	3	3	31
0-1	14	10	2	0	0	26
Mean	2.0	4.8	6.6	7.6	8.6	5.5
Median	2.8	4.7	7.5	8.7	9.0	5.5
Range	0-11	0-12	1-12	2-13	2-15	0-15

To simplify the picture, the MBR scores were condensed; the LESS groups were collapsed to no law violations (Group I), minor law violations (Groups II-III), and major law violations (Groups IV-V); and the frequencies were converted to percentages by the collapsed groups, as shown in Table 2. Here it is even more apparent that low intensity of law encounter goes with low occurrence of maladaptive behavior, while high severity of law encounter is associated with a high degree of maladaptation. Overall, there is appreciable covariation, demonstrating that the MBR is highly predictive of the criterion of law encounter severity.

Table 2

MBR Distribution Data in Percent for 119 Subjects in the 1971 Follow-up Study by Law Violation (For Groups II-V the *N*s represent the total number of law encounters rather than the actual number of *S*s.)

MBR Score	Law Violation			
	None (LESS Group I) *N* = 40	Minor (LESS Groups II-III) *N* = 69	Major (LESS Groups IV-V) *N* = 43	Total *N* = 152
12-14	0.0	5.8	21.1	9.2
9-11	2.5	18.8	26.3	16.3
6-8	12.5	23.2	23.7	20.4
3-5	30.0	23.2	18.4	23.8
0-2	55.0	29.0	10.5	31.3
Total	100.0	100.0	100.0	100.0

A further condensation is presented in Table 3, where the data have been sorted, by LESS groups, into high-low MBR halves and thirds. Again, the predictive accuracy of the MBR is clearly demonstrated. For instance, only 15% of LESS Group I falls in the top half of the distribution, as compared to nearly 80% for Group V. In the low half of the distribution, Group I shows 85%, compared to 22% for Group V. Sorting the data into high-low thirds further emphasizes these trends. Overall, the effects are large in magnitude, and the trends are highly consistent.

Table 3

Percentage of Cases in High-Low Halves and Thirds of the MBR Distribution for 119 Subjects in the 1971 Follow-up Study by LESS Groups (For Groups II-V the *N*s represent the total number of law encounters rather than the actual number of *S*s.)

Distribution	LESS Group					
	I *N* = 40	II *N* = 43	III *N* = 26	IV *N* = 17	V *N* = 26	Total *N* = 152
MBR Halves						
High (Score =>6)	15	40	62	60	78	47
Low (Score <= 5)	85	60	38	40	22	53
MBR Thirds						
High (Score range: 8-14)	8	30	42	60	70	35
Low (Score range: 0-2)	55	37	15	7	13	31

Analysis by Total Number of *S*s

The data relating the MBR as a predictor to the LESS as the criterion were also analyzed on an *S*-by-*S* basis. Summary data are contained in Table 4, where trends quite consistent with those in the earlier tables may be seen. Averages for extreme LESS groups (I and V) differ by a factor of about three, as in Table 1. The corresponding percentages falling in the top half of the distribution for extreme groups were 23% and 85%, very similar to the figures previously cited in Table 3.

Table 4

MBR Distribution and Analytical Statistics for 119 Subjects in the 1971 Follow-up Study by LESS Group

Items	LESS Group					
	I *N* = 39	II *N* = 21	III *N* = 16	IV *N* = 17	V *N* = 26	Total *N* = 119
Mean	3.0	4.1	4.8	6.6	7.8	5.0
Median	2.9	3.8	4.5	7.0	8.5	4.8
Range	0-11	0-12	1-12	2-13	2-15	0-15
Percent in High Half	23	33	38	65	85	46
Percent in High Third	10	29	19	47	58	31
Percent in Low Third	51	43	31	12	12	33

Overall, the high predictive accuracy of the MBR for the LESS criterion appears whether the units are total *S*s or total number of scores available.

Analytical Summary

In the overall analysis, all measurements were statistically treated, then analyzed for extreme criterial and score groups. For validity determinations, two indices were employed, the Q-Coefficient (a twofold correlation procedure similar to the Phi Coefficient) and percent accuracy, in which the two-by-two tables were analyzed for percent of cases correctly identified. The outcomes of these analytical procedures are summarized in Table 5. Both indices achieve a high level of predictive accuracy when all the data are employed, but this accuracy increases as more extreme criterial and score groups are utilized. Maximal predictive accuracy is achieved when high-low thirds of the MBR distribution are used to compare LESS Group I with Groups IV and V. In Table 5, for the extreme data, the Q-Coefficients exceed .90, and the percent of accuracy ranges from just above 80% to near 90%.

Table 5

Validity (Q) Coefficients and Percent Accuracy for MBR Distribution Halves and Thirds by LESS Groups for All *S*s in the 1971 Follow-up Study and All Available Scores (For *all available scores*, the *N*s in Groups II-V represent the total number of law encounters.)

Items	Distribution Halves		High-Low Thirds	
	LESS I-II vs III-V	LESS I vs IV-V	LESS I-II vs III-V	LESS I vs IV-V
All *S*s (*N* = 119)				
Q-Coefficient	.69	.83	.75	.92
Percent Predictive Accuracy	70	77	72	81
All Available Scores (*N* = 152)				
Q-Coefficient	.69	.86	.91	.93
Percent Predictive Accuracy	70	78	76	87

The data presented in Table 5 form a firm foundation for individual prediction. In other words, individuals with low MBR scores (0-1) have about a ten-to-one probability of having no contact with the law and, more importantly, of staying out of prison.

Individuals with high MBR scores (8 and above) have similar odds of having severe law encounters and returning to prison. Such outcomes indicate extremely high predictive accuracy and compare favorably with those for the EDS.

Comparison of MBR Outcomes for the 1969 and 1971 Follow-up Studies

The basic format of the MBR was established in the early part of the 1969 Follow-up Study, during which it was revised and refined. The version of the instrument that was employed in the 1971 study was similar enough to allow some direct comparisons. The most straightforward of these focuses on the proportion of cases falling above certain cutoff points, especially the midpoint reflecting the top one-half of the distribution and, separately, the top one-third of all scores.

The percentage of scores for the top half and top third of the MBR distribution for the two follow-up studies is shown in Table 6. The latest version of the MBR is readily seen to be more discriminating than the earlier version in both divisions of the distribution. In particular, the version of the MBR used in the 1971 study is appreciably more sensitive to the detection and prediction of major law violators (LESS Groups IV and V) than was the version used in the 1969 study. The increased discriminative power is reflected in both the percentages and the validity (Q) coefficients.

Table 6

Percent of Cases Falling in the Top One-Half and One-Third of the MBR Distribution in the 1969 and 1971 Follow-up Studies by Law Violation

Studies	Law Violation			Q-Coefficient
	None (LESS Group I)	Minor (LESS Groups II-III)	Major (LESS Groups IV-V)	
Top One-Half of Distribution				
1969 $N = 128$	36%	69%	52%	.55
1971 $N = 152$	15%	46%	70%	.69
Top One-Third of Distribution				
1969 $N = 128$	14%	47%	48%	.80
1971 $N = 152$	8%	35%	65%	.90

As an overview, it appears that refinements and revisions in the MBR from the 1969 to the 1971 study yielded increased predictive power. Further analysis and refinement is required in a couple of MBR items, as indicated by the item and cluster analyses that follow.

MBR Item Outcomes

Each of the 16 items of the MBR was subjected to item validation procedures, reported by calculating the percentage of *S*s in each LESS group scoring "0" (adaptation) for each item. The results are contained in Table 7. Most noteworthy in this table is the rather orderly progression of the percentage of *S*s scoring "0", with a maximum for LESS Group I and a progressive decrease through Group V. There are a few reversals, but the overall trend is both large and consistent for most items.

Table 7

Percentage of 1971 Follow-up Study Subjects in Each LESS Group Scoring "0" for Each MBR Item and Validity (Q) Coefficients (*N* = 119)

MBR Item	Percentage of Ss Scoring 0					Q-Coefficient	
	LESS I *N = 39*	LESS II *N = 21*	LESS III *N = 16*	LESS IV *N = 17*	LESS V *N = 26*	I-II vs III-V	I vs IV-V
1. Income	77	67	63	47	35	.53	.67
2. Working Conditions	64	67	63	47	27	.43	.54
3. Interaction with Co-workers	79	76	69	59	38	.44	.63
4. Interaction with Employer	77	71	69	59	38	.46	.59
5. Work Attendance	69	67	56	47	23	.54	.65
6. Alcohol Use	85	67	63	53	50	.51	.68
7. Drug Use	95	71	81	53	62	.64	.86
8. Gambling	100	90	88	100	85	.53	.60
9. Fighting	97	86	88	65	54	.76	.93
10. Verbal Abusiveness	74	71	63	71	65	.17	.17
11. Maladaptive Associates	69	62	63	12	19	.66	.84
12. Money Management	74	57	63	41	38	.32	.63
13. Physical Condition	85	86	75	82	88	.07	.06
14. Psychological Adjustment	82	86	75	71	73	.30	.28
15. Legal Processes	92	81	94	65	73	.40	.68
16. Other Behavioral Problems	79	81	63	71	50	.47	.47

The last two columns of this table present the Q-Coefficients for the overall data, LESS Groups I-II versus III-IV, and, for the extremes, LESS Group I versus Groups IV and V. Correlational values of about .15 are significant at the 5% level; ones of .20 are significant at the 1% level. Examination of the validity coefficients indicates that the values for most items achieve significance far beyond the 1% level, and all but one (Item 13, Physical Condition) at the 5% level.

Overall, it appears that the individual items of the MBR exhibit a high level of predictive accuracy for the criterion of law encounter severity. Further analysis and consideration must be given to the low validity items.

MBR Cluster Results

The items of the MBR form clusters that focus on major areas of behavior. These clusters and the items forming them are as follows: *employment* (Items 1-5, 12), *addiction* (Items 6-8), *interpersonal* (Items 9-11), *adjustment* (Items 13-14), and *legal and other behavioral problems* (Items 15-16). The data for these clusters were combined and subjected to statistical analysis.

The distribution and analytical outcomes are presented in Table 8. The orderliness of the cluster data is quite striking. There is only one small reversal in mean score from LESS Group I to V across the five clusters. The validity coefficients (Q) are significant beyond the 1% level in all cases and in all but one are of sufficient magnitude to warrant individual prediction. The one instance is *adjustment*, where Physical Condition (Item 13), with near-zero validity, is combined with Psychological Adjustment (Item 14), of moderate validity. Further investigation is called for in this area, including an overall factor analysis.

Table 8

Distribution Statistics and Validity (Q) Coefficients for Item Clusters of the MBR (Data from the 1971 Follow-up Study)

Clusters	LESS Group					Total
	I $N = 39$	II $N = 21$	III $N = 16$	IV $N = 17$	V $N = 26$	$N = 119$
I. Employment (Items 1-5, 12)			Overall Q = .60			
Mean	1.6	1.95	2.3	3.0	4.0	2.5
Median	1.4	1.6	2.3	3.0	5.9	1.9
Range	0-6	0-6	0-6	0-6	0-6	0-6
II. Addiction (Items 6-8)			Overall Q = .74			
Mean	.2	.7	.7	.9	1.0	.6
Median	0	1.2	0	1.5	1.5	0
Range	0-1	0-2	0-2	0-2	0-3	0-3
III.Interpersonal (Items 9-11)			Overall Q = .63			
Mean	.6	.8	.9	1.5	1.6	1.0
Median	0	1.2	1.2	2.0	2.3	1.4
Range	0-2	0-2	0-3	0-3	0-3	0-3
IV. Adjustment (Items 13-14)			Overall Q = .25			
Mean	.3	.3	.5	.5	.4	.4
Median	0	0	.1	0	0	0
Range	0-2	0-2	0-1	0-2	0-1	0-2
V. Legal and Other Behavioral Problems (Items 15-16)			Overall Q = .56			
Mean	.3	.4	.4	.6	.8	.5
Median	0	0	0	1.3	1.3	0
Range	0-1	0-2	0-1	0-2	0-2	0-2

Overall, the analyses of the MBR by clusters are consistent with those for total score and individual items, showing that the instrument has a high degree of validity and predictive accuracy for the law encounter criterion.

MBR Score and Institutional Treatment

The MBR, EDS, and WAR were employed as a battery of behavioral assessment instruments in the 1971 Follow-up Study to evaluate the postrelease effects of several different institutional treatment procedures on the 119 study *Ss*' behavior. Four types of institutional treatment were represented: Manpower Development and Training (MDT), conducted by the EMLC; Token Economy (TE), operated by the EMLC in a special prison unit; a combination of MDT and TE; and State Trade School (STS) training. The

comparison or control group was not given any of these intervention treatments. The *Ss* were followed up for an average of 18 months. Because *N*s were quite small, the TE groups were combined for analysis and presentation. For the same reason, LESS Groups I-II (minimal law encounters) were compared with Groups III-V (law violations).

The results relating institutional treatment to the LESS criterion are summarized in Table 9. There are two noteworthy features of this table, namely, the appreciable variability and the clear differentiation of the LESS groups by MBR score. The latter finding is completely consistent with the data presented previously, which also showed a high predictive relationship between MBR score and the criterion of law encounters and violations.

Table 9

MBR Scores by Institutional Treatment for Minimal Law Encounters (LESS Groups I-II) and for Law Violations (LESS Groups III-V) for 1971 Follow-up Study Subjects

Institutional Treatment	LESS Group		
	I-II	III-V	Total
MDT			
N	21	30	51
Mean	4.0	6.8	5.7
Median	3.7	7.4	5.9
Range	0-11	0-15	0-15
Token Economy (TE)			
N	11	9	20
Mean	2.8	5.4	3.9
Median	2.3	6.5	3.9
Range	0-7	1-11	0-11
State Trade School (STS)			
N	10	7	17
Mean	3.5	3.9	3.6
Median	2.8	3.5	3.3
Range	1-10	2-7	1-10
Control			
N	18	13	31
Mean	3.5	6.8	4.9
Median	3.7	6.3	4.7
Range	0-8	2-13	0-13
Total			
N	60	59	119
Mean	3.4	6.4	5.0
Median	3.4	6.4	4.8
Range	0-11	0-15	0-15

Differences among institutional treatment conditions are somewhat obscured by the appreciable variability within and across groups. The STS group shows the lowest MBR scores, followed closely by the TE group. Both the control and MDT groups show comparable MBR scores for the LESS groups. Analyses of the data of Table 9 by both shortcut and traditional procedures via computer indicate that the only significant difference lies in MBR score by LESS condition. The differences among treatment conditions are small relative to variability and insignificant.

A basic datum deriving from the contents of Table 9 deals with the proportion of *Ss* falling in each LESS group by treatment condition. This matter amounts to the classical problem of "recidivism rate." The summary presented in Table 10 provides the percentages in LESS Groups I, II-III, and IV-V.

Table 10

Percent 1971 Follow-up Study Subjects in Three Law Violation Groups by Type of Institutional Treatment

Institutional Treatment Group	Law Violation		
	None (LESS Group I)	Minor (LESS Groups II-III)	Major (LESS Groups IV-V)
MDT			
N = 51	20	35	45
Token Economy (TE)			
N = 20	35	40	25
State Trade School (STS)			
N = 17	41	30	29
Control			
N = 31	45	23	32
Total			
N = 119	33	31	36

The divergent group in Table 10 appears to be MDT treatment. Its percentage is lower in LESS Group I and higher in Groups IV-V. The other treatment groups look quite similar in their percentages across the LESS groups. It should be added that none of the differences apparent in Table 10 reach acceptable levels of statistical significance. The relative frequency of law encounters and violations by type of institutional treatment

is considered in detail in the overall report on the 1971 Follow-up Study (Jenkins, Witherspoon, DeVine, deValera, Muller, Barton, & McKee, 1974).

Changes over Time and Reliability

MBR scores were obtained for all available *S*s at two points in time, 3-6 and 12-15 months postrelease, allowing for assessment of consistency of MBR score over time, as well as estimation of reliability of behavior patterns. As previously mentioned, the original sample was somewhat depleted by some *S*s leaving the geographical area and others being unavailable due to incarceration. A total sample of 96 *S*s was available at the two time points for estimates of consistency and reliability.

Table 11 summarizes the time trend data separately for the three law violation groups.

Table 11

Changes in MBR Score over Time for 96 Subjects in the 1971 Follow-up Study (*N* is given in parentheses.)

Law Violations	Mean MBR Score at 3-6 Months	Mean MBR Score at 12-15 Months
None (LESS Group I)	3.4 (59)	4.0 (25)
Minor (LESS Groups II-III)	4.3 (26)	5.0 (44)
Major (LESS Groups IV-V)	8.5 (12)	8.0 (27)

This numerical information indicates considerable stability for MBR measurements over time. The *none* and *minor* groups show slight, insignificant increases, while the *major* sample exhibits a slight but insignificant decrease. About one-fifth of the *S*s showed the same score on the repeated measurements, mostly those at the low end of the MBR scale. The remaining *S*s split about evenly between increases and decreases. Repeated measurement or trend analysis of these data yields significance only for the law violation index. Time trends and interaction factors were quite insignificant. This outcome is not surprising in light of the appreciable MBR variability across *S*s. Scores ranged from 0-14 over all groups and conditions.

The same 96 *S*s were employed to determine test-retest reliability. MBR scores at both 3-6 and 12-15 months were sorted into the categories of high (5 and above) and

low (4 and below). The relationship between performance at the two time points is summarized in the following representation:

12-15 Months	3-6 Months	
	High	Low
High	40	4
Low	5	47

Here it can be seen that high-low score agreement clustered around 90% in both categories as well as overall. The reliability coefficient best representing these data is .90. The corresponding individual reliability correlations for the *none*, *minor*, and *major* law violation groups ranged from .85 to .95.

Another aspect of reliability of interest in this context is judge agreement or rater-rater reliability. In the 1971 study, a subsample of about 50 *S*s was interviewed approximately once a month in one particular locale. Data were available on about 25 of these *S*s seen by different interviewers. The overall coefficient associated with judge agreement was .84. In addition, in another study, 15 observers scored the MBR from a video tape recording of an interview. Percent exact agreement was about 85%; agreement within one point, 14%; and agreement within two points, the remaining 1%.

The repeatedly observed subsample allowed for further analysis of MBR scores over time. Four or more MBR measurements were available on a total of 36 *S*s. Each *S*'s scores were sorted into four equal parts, following the traditional Vincent procedure. There were 10 *S*s with no law violations, 15 with minor violations, and 11 with major ones. The average data for the three law violation groups by the four time periods, three to four months apart, are contained in Table 12.

Table 12

Mean MBR Scores for a Subsample of the 1971 Follow-up Study over Four Time Periods by Law Violation

Time Period	Law Violation		
	None (LESS Group I) $N = 10$	Minor (LESS Groups II-III) $N = 15$	Major (LESS Groups IV-V) $N = 11$
1	1.5	3.5	4.8
2	2.6	3.6	5.5
3	2.0	3.4	7.8
4	3.3	3.2	8.6
Overall	2.5	3.5	7.1

The trends in this table are somewhat different from those previously reported in Table 11, but they are quite consistent with the findings of the 1969 study. The *none* and *major* violation groups show clear upward trends, while the *minor* group exhibits a slight decrement over time. On a head count basis, however, only the *major* group yielded a significant increment. The percentage of *S*s increasing over time for *none, minor*, and *major* were 60%, 40%, and 86%. From these data, the predominant increases in MBR score emerge in the *major* law violation group.

The repeated measurement data available on these 36 *S*s offer a basis for further calculation of MBR test-retest reliability. A split-half method was employed in correlating scores obtained at periods one and three against those obtained at two and four. A twofold procedure was employed, and 86% of the *S*s maintained their high or low position across both sets of measurements, yielding a reliability coefficient of .95. Again, the consistency of measurement and reliability of MBR scores have been amply demonstrated.

While MBR measurements achieve a high level of consistency, reliability, and agreement, these matters are quite secondary to those of validity. The predictive accuracy of an instrument for its criterion is the basic datum. An instrument can exhibit only moderate reliability while yielding a high level of validity. After all, it makes little difference whether an individual exhibits a 10 or a 12 on the MBR; both scores indicate a high degree of maladaptive behavior. Overall, the MBR shows a high level of predictive accuracy.

Relationship of the MBR to the EDS and WAR

The objectives of the 1971 Follow-up Study included the development and refinement of instruments and procedures that would identify specific areas for intervention and

provide long-range evaluation of treatment programs. It was in this context that the MBR and the other predictive instruments (the EDS and WAR) were developed, applied, and refined. This section examines the relationship among the three predictive instruments.

The overall correlation of the MBR and EDS in the present study was about .70. This relatively high correlation is not too surprising, for the MBR was constructed as the counterpart of the EDS. In addition, it is difficult if not impossible to clearly separate environmental input from behavioral output; obviously, they shade over one into the other.

The WAR focuses on a different dimension, *duration*, as contrasted with the *frequency* and *intensity* assessed by the EDS and MBR. The MBR-WAR correlation was .60, while the EDS-WAR figure was about .50.

Overall, however, the magnitude of these correlations leaves considerable variance unaccounted for, and the inference may be drawn that sufficiently different aspects of human activity are being tapped to warrant continued use of all three instruments. Research and analysis continue on the clarification and explication of the interrelationships among the measures.

Discussion and Conclusions

The data from the EMLC's 1971 Follow-up Study, presented in this report, show that the MBR is highly predictive of law encounters and violations. Validity is high for total score, cluster scores, and individual items. The MBR provides information about specific responses in the areas of employment, addiction, interpersonal relationships, psychological adjustment, and legal problems–information directly pertinent to the development and evaluation of treatment programs. This section will discuss some of the theoretical-methodological considerations in treatment program development, suggesting ways in which the MBR may be used.

In the planning stages of any program that is to treat deviant behavior, systematic procedures must be selected or developed to identify the behavioral and environmental variables correlated with the particular behavior. Identification of these variables is especially important in regard to criminal behavior, which cannot be treated per se. Treatment must therefore focus on the environmental and behavioral events antecedent to and associated with the occurrence of law encounters and violations.

The MBR, as well as the EDS and WAR, is particularly useful in identifying such "crime-related" events. For instance, the EMLC's 1969 and 1971 follow-up studies found

that full-time employment deters criminal behavior. The first five items of the MBR are directly concerned with response to various aspects of employment. Treatment might thus be designed to promote adaptive responses in the areas measured by these items. If, for example, chronic absenteeism (measured by Item 5) is interfering with *S*'s continued employment, treatment could be implemented on a contingency basis to deal specifically with this problem.

Similarly, the 1971 Follow-up Study noted that interpersonal skills may be the single most critical factor in successful postrelease adjustment. Many of the MBR items measure interpersonal relationships, e.g., Interactions with Co-workers, Fighting, and Verbal Abusiveness. Information provided by the MBR could thus be used to identify the problem areas, and treatment could then be devised for the specific behaviors.

The immediate result of such treatment should be a change in the specific problem behavior--for instance, *S* now attends his job regularly and punctually. (Job participation is, of course, a separate area for treatment.) The end result should be a reduction in law encounters and violations. The MBR is useful in the evaluation phase of a program as well as in the planning stage. Repeated MBR measurements over time will determine both the short-term and long-range treatment effects. Comparison of scores over time will also indicate whether additional treatment is needed and, if so, in what areas.

This discussion has dealt primarily with the use of the MBR in treatment programs. In closing, it should be noted that the EDS and WAR provide additional information for use in program planning and evaluation and, when used with the MBR, give a much broader picture of the variables associated with criminal behavior.

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